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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/855,629

05/15/2001

Raoul Florent

FR 000047

9276

24737

7590

07/30/2004

PHILIPS INTELLECTUAL PROPERTY & STANDARDS
P.O. BOX 3001
BRIARCLIFF MANOR, NY 10510

EXAMINER

NAKHJAVAN, SHERVIN K

ART UNIT

PAPER NUMBER

2621

DATE MAILED: 07/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/855,629

Applicant(s)

FLORENT ET AL.

Examiner

Shervin Nakhjavan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1, 6/1, 16/1, 16/6, 17/1, 17/6 and 18 is/are rejected.
- 7) ☒ Claim(s) 2-5, 6/2-6/5, 7-15, 16/2-16/5, 16/7-16/15, 17/2-17/5, 17/7-17/15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Double Patenting

1. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 09/860,355. Although the conflicting claims are not identical, they are not patentably distinct from each other because every element of claim 1 of the instant application is equivalently claimed in the claim 1 of the co-pending applications. The language, *pixel strings* of claim 1 in the instant application is equivalently claimed as *paths* in the co-pending application generated from points in an image which in image processing points refers directly to pixels of the image. In addition, the language of applying of a phase operation to automatically yield one best string from the pixel strings in claim 1 of the instant application and front propagation to supply endpoints and to construct candidate paths in claim 1 of the co-pending application are equivalent, specially when the outcome of both inventions are the same outcome i.e. representation of a threadlike structure. Since every element of claim 1 of the instant application

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directly or equivalently appears in the claim 1 of the co-pending application and the word "comprising" in claim 1 of the instant application does not preclude further limitations of claim 1 of the co-pending application, the invention defined in claim 1 of instant application would have been obvious to one of ordinary skilled in the art in view of claim 1 of the co-pending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claim Objections

3. Claims 8-14, 15/8-15/14, 16/8-16/15 and 18/8-18/15 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 8 cannot depend from a multiple dependent claim 6. Other objected claims depend from improper multiple dependent claim 8 and in addition some of the dependent claims are improper multiple dependent claims themselves i.e. claims 10, 12, 14 and 15. See MPEP § 608.01(n). For the purposes of this office action, claims 8, 10, 12, 14 and 15 are treated as depending from claim 6 only.

4. Claim 8 is objected to because of the following informalities: Line 2, open-ended parenthesis. Appropriate correction is required.

5. Claim 14 is objected to because of the following informalities: Line 1, phrase "the comprising" is ungrammatical. Appropriate correction is required.

Claim Rejections - 35 USC § 101

6. Claim 18 is rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The “computer program product for carrying out instructions for carrying out a method..” is non-statutory because “computer program product” alone has no set definition. The acceptable formats are “A computer program embodied in a computer readable medium for performing the steps of...” or “A computer readable medium storing a program for performing the steps of...”.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, Line 4, the phrase “a same threadlike structure” is ambiguous if it is referring to a previously cited threadlike structure or a threadlike structure, which has not been cited before or if it refers to a similar threadlike structure. Line 5, the phrases in the parenthesis “Intra-Set Phase, Extra-Set Phase” are vague and confusing because, it is unclear one or both of the phase actions will be performed. Line 6, the phrase “the pixel strings (INSI,EXSI)” lacks antecedent bases because, the items in parenthesis have not been previously cited and further if the claim requires one or both

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of the items in the parenthesis. Therefore, these citations are vague and confusing because it is unclear what feature or element is further limited by this language.

Claims 2-18 variously depend from claim 1 and are thus themselves indefinite.

9. Claims 2, 13, 14 and 15 lack antecedent bases. In claim 2, line 5, phrase "the considered string set" seems to be referring to a previously cited considered set that does not appear in the claim. In claim 13, line 1, the phrase in line 1 "the formation", line 2, the phrase "the potentials of the pixels", line 3, the phrase "the considered string set", line 4, the phrase "the other string sets" and line 7, the phrase "the lower potentials" seem to be referring to previously cited potentials, considered string set, other string sets, and lower potentials, respectively, which do not appear in the claim. In claim 14, line 2, phrase "the determination" and phrase "the opposite End-points", lines 2-3, phrase "the formation of a second potential image", line 4, phrase "the other pixels" and lines 6-7, phrase "the connection paths" seem to be referring to previously cited determination, opposite points, a formation, other pixels and a connection path, respectively, which do not appear in the claim. In claim 15, lines 1-2, phrase "the selection operation" and line 3, phrase "the height of ridgeness" and phrase "the paths", respectively, seem to be referring to a previously cited selection, height and path the do not exist in the claim. Therefore, these citations are vague and confusing because, it is unclear what feature or element is further limited by this language.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1, 6/1, 16/7, 16/6, 17/1, 17/6, 18/1 and 18/6 are rejected under 35 U.S.C. 102(b) as being anticipated by Corby, Jr. (US 5,274,551).

Regarding claim 1, Corby teaches, an image processing method for extracting a thread-like structure (GW) represented on the background in a digital noisy original image (IM1), (Column 5, Lines 9-22, where a thin black line corresponding to a Guide wire which corresponds to the threadlike structure is shown and the image is further processed to generate representation by detecting the pixels that are part of the line) comprising steps of acquisition (1) of the original image data (Column 5, Lines 8-11, where an image is captured) and steps of: extraction (2) of pixel strings (A1, A2,..) of a same threadlike structure (Column 6, Lines 3-10, where chains or strings of pixels are identified related to the guide wire or threadlike structure); operation (4, 5) of a phase (intra-Set Phase, Extra-Set Phase) automatically yielding one Best String (A) from the pixel strings (INSI,EXSI) for representing the threadlike structure (GW) (Column 6, Lines 10-13, an intra-set phase or compiling of longest connected paths of pixel chains or strings INSI are performed from which an optimal or best string or path is detected that has least amount of curvature);

Corby teaches limitation of claim 6, the method comprises the steps of: extraction (2) of elementary pixel strings (A1, A2,..) associated in string sets (SA), each of same threadlike structure (IM2) (Column 7, Lines 3-12, where chains of pixels being an elementary string of pixels within a path or string set are extracted to qualify the path

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or string as the optimal path); operation (4) of a First Phase (intra-Set Phase) automatically yielding one best String (A) per string set (INSI) for representing the threadlike structure (GW) (Column 7, Lines 5-17, an optimal path criteria testing is performed to check if the path has the longest group semi-connected group of chains and also to check if the path or string has the minimum curvature, wherein this action on the paths or strings is treated as *the first phase (intra-set phase) step*);

Corby teaches limitation of claims 16/1 and 16/6, programmed computer or special purpose processor to perform the methods of claims 1 and 6 (Column 4, Lines 16-24, where the item 102 is the processor);

Corby teaches, limitation of claims 17/1 and 17/6, acquiring medical digital image data (Column 3, Line 66 through Column 4, Line 4); a system a having access to said digital data for carrying out a processing of the methods of the claims (column 4, Lines 16-24, item 102 is the system) and having display means for displaying the medical digital images and the processed images (Column 4, Lines 12-16, where the digitized images could be displayed by display device 162 and/or it could be displayed after processing performed by unit 102 on display 180 or figure 1);

Corby teaches, limitation of claims 18/1 and 18/6, a computer program product for performing the method of the claims (Column 4, Lines 16-20, where the programming of a digital computer is inherent in the teachings).

Allowable Subject Matter

12. Claims 2-5, 6/2-6/5, 7-15, 16/2-16/5, 16/7-16/15, 17/2-17/5, 17/7-17/15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record specifically Corby does not teach inside said string set, forming a set of candidate paths linking couples of endpoints of the strings and selecting one best candidate path as best string in the considered set of claim 2, forming sets of connection paths, outside the pixel strings, linking the opposite endpoints of said adjacent couples and selecting respective best connection paths for linking the couples of pixel strings and forming one best string from the linked pixel strings of claim 4, operation of a second phase automatically yielding one final best string by linking best strings of claim 7, inside a considered string set, formation of couples of endpoints of elementary strings, formation of set of candidate paths linking said couples of endpoints of claim 8, combined with other features and elements of the claims.

Other prior art cited

13. Prior art of record cited and not relied upon is considered pertinent to applicant's disclosure.

The US Patent 4,910,786 teach path finding related to applicants invention as claimed.

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Contact information

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shervin Nakhjavan whose telephone number is (703) 306-5916. The examiner can normally be reached on Monday through Friday from 8:00 am to 5:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Boudreau, can be reached at (703) 305-4706.

Any response to this action should be mailed to:

Assistant Commissioner for Patents
Washington, DC 20231

Or faxed to:

(703) 872-9306 for *formal* communications, please mark "**EXPEDITED PROCEDURE**"

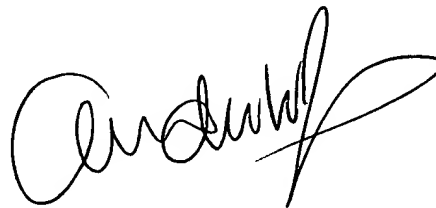
or:

for *informal* or *draft* communications; please label "**PROPOSED**" or "**DRAFT**".

Hand delivered responses should be brought to Crystal Park 2, 2121 Crystal drive, Arlington, VA, sixth floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application should be directed to the Tech center 2700 customer service office (703) 306-0377.

Shervin Nakhjavan S.N
Patent Examiner
Group Art Unit 2621
July 21, 2004.



**ANDREW W. JOHNS
PRIMARY EXAMINER**